

waterjet

LIQUID POTENTIAL

With its waterjet machines, **Omax** takes customers places they never knew they could go and vice versa

BY JOHN LOOS

Omax waterjets can process an array of materials, including titanium, exotic alloys, copper and composites.

Any good parent wants to instill in his or her children the feeling that they have limitless potential and that growing up to be a doctor, lawyer, CEO or even a pie-maker isn't remotely out of reach.

Whereas most of us choose careers specializing in one arena, waterjet technology, in some ways, is like a child growing up and realizing all the facets of his widespread potential. From cutting steel to stone to carpet and for applications as varied as airplane turbines and artistic sculptures, companies are continually discovering there's not much a waterjet can't do.

Omax Corp., Kent, Wash., a provider of precision-engineered, two-axis waterjet solutions, has built its business around the diverse capabilities waterjet technology can offer, which often result directly from customer ingenuity and imagination. Since its founding in 1993 by Dr. John Olsen and Dr. John Cheung, Omax has supplied its waterjets through an increasing network of distributors to an array of machine shops, job shops, laser shops, aerospace shops, tooling shops and metal fabricators. And if there's a commonality among many of its disparate customers, it's a dedication to maximizing the flexibility of their waterjet machines to make inroads into production areas they weren't capable of entering before.

"I've got customers cutting anything from cardboard and Indiana limestone all the way to tool steel and titanium," says Dave Kvasnicka, regional sales manager for Omax. "The broad range of what our customers do is impressive. I've actually got quite a few customers that are literally within blocks of each other, but they in no way compete with each other because of the diversity that waterjet technology offers."

Versatile cutting

One of Omax's customers that recently discovered the versatility of waterjet technology is ERA Industries Inc., Franklin Park, Ill., a privately held precision machine job shop with a focus on components for military vehicles and commercial aerospace. In August 2007, the company purchased its first Omax machine, a 55100 JetMachining Center with 55 inches by 100 inches of cutting capability, a Tilt-A-Jet cutting head for taper compensation and programmable rotary axis for 2-D applications to process titanium and exotic alloys specified by the government for use in commercial and military turbine components.

The 55100 can cut anything from metal to exotic



alloys, glass, ceramics and wood, among other materials. It also has a programmable, motorized Z-axis, direct-drive pump system available from 30 horsepower to 80 horsepower at pressures up to 55,000 pounds per square inch and Omax IntelliMax software to boost cutting speeds.

Within four months, the company purchased a second, smaller waterjet, a 2652 JetMachining Center with the same cutting capabilities and most of the same component features, including the Tilt-A-Jet cutting head. Both machines have been enlisted to do the heavy blanking and roughing once asked of the milling machines. However, the breadth of the waterjets' capabilities has created production possibilities for ERA.

"We purchased another [waterjet] just due to the fact that all of a sudden we found there was such an amazing amount of products we could adapt it to," says Elvis Valla, general manager for ERA, noting that materials such as copper and composites, incompatible with a laser cutting machine, can now be cut with the waterjets. "For additional capacity, we purchased a second one. It's a smaller table for smaller components and frees up the larger system."

Although the initial application for the machines required the rotary to run for 24 hours, the need for the turbine components tapered a bit. However, this didn't mean the equipment was left to gather dust, as could be the case for a piece of a equipment with narrower functionality. Instead, ERA's Omax machines were put to work on other jobs.

"The rotary slowed down in production value, but on the flip side, [ERA was] able to take that technology and go after other markets that they weren't considering before without the changing of tools or purchasing of new equipment," says Kvasnicka. "You'd be amazed how many tool and die shops are finding that some of

ERA purchased a 2652 JetMachining Center for processing smaller components.

this really abstract, even artistic work, brings a lucrative payback.

"Usually, it starts to open their eyes once employees and customers see the capabilities that it offers," Kvasnicka continues. "It basically stirs up new activity, where they start seeing other things that they were doing with alternate applications and alternate technology, where they can see the speed by putting it on this [waterjet] technology. It just opens up new avenues."

And saving time and reducing costs go hand in hand with the new production possibilities at ERA.

"It frees the milling machines up to do other work," says Valla. "We leave the milling machines to do the precise final work and use the waterjet to do all the roughing work. And the cost benefit of using the waterjet, per cut or per hour, versus having the mills do the roughing, it's probably 60 percent.

"With the level of precision that we need to do in these parts, it's really the most cost-effective way to blank them out," he adds.

The 'yes I can' tool

Given the flexibility of the waterjet machines, ERA was able to expedite overall processes, particularly with short-run jobs, hog-outs and heavy roughing. In these areas, the company found the waterjet systems it purchased are more efficient when compared with its old milling machines or a laser machine, which can be finicky with certain materials.

"We gave them the diversity to cut a lot of exotic alloys and materials that they weren't capable of doing, or not doing in a timely fashion," says Kvasnicka. "In other words, the tooling cost more than the actual project. So they were able to produce components of an exotic nature with a quick turnaround without relying on outside vendors. And that solution offered them a broader demographic of customers and capability."

ERA purchased its Omax machines through the nearby distributor Tristate Machinery Inc., Wheeling, Ill., the largest full-service distributor in the United States,

meaning replacement parts are available within 24 hours. This, combined with the fact that all new Omax parts can be retrofit into old machines, ensures its machines will be up and running as continuously as possible. Valla also says he found the computerized interface of the waterjets ERA purchased to be intuitive and understandable for seasoned machinists and novice programmers alike, meaning a third Omax machine may not be out of the question.

"In the future, as we grow—because we've grown phenomenally over the last few years—we do plan on increasing our [waterjet] capabilities," says Valla. "Sure, you have the initial cost of the equipment, but the benefits, especially for doing the rough machining, far outweigh the cost. You recoup the cost of the equipment quite quickly."

To Kvasnicka, waterjet technology stands out because, unlike other cutting processes, it's not defined by what it can't cut but by all the things it can.

"This is the 'yes I can' tool," he adds. "That's what has basically made the waterjet process the fastest-growing machine tool in the world. You want to cut carpet, you want to cut titanium, you can, and anything in between."

Kvasnicka attributes many of the now-implemented processes on Omax's waterjet machines to the continued ingenuity of its customers, who have used what they know about their systems as a jumping-off point to new jobs.

"We have applications where you look at it and say, 'Do you really want to do that?'" he says. "Even the things we're not so sure about, our customers reinvent that every day." ■

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